

**545oneDrive2\_00020033**

# Expanded EPACT Program

An Update

January 15, 2008

## Base EPAAct Program Design

- Tier 2 fuel effects (RVP, T50, T90, Aromatics, EtOH)
- “RFS 2 Pilot” to precede main program
  - Three additional, in-use E0, E10, E15 fuels tested in all 19 vehicles at 75°F and 50°F
  - RFS 2 testing from early April till end of June, 2008
- 16 fuels, 19 vehicles in main program
- Estimated cost (Dec. 20, 2007): \$3.95M vs. previous EPA estimate of \$3.45M
  - Discussions underway with SWRI to reduce program cost
- Base Program Timeline, w/o safety margin
  - Jan. 2008 – March 2008: Fuel blending, vehicle recruiting
  - April 2008 – December 2008: Emissions testing
  - December 2008 – February 2009: Reporting
- The Base Program is already moving forward
- Lubrizol has committed to provide lubricant support for this program

## Expanded EAct Program

- Met with NREL in Ann Arbor on January 9 to discuss the design of the Expanded EAct Program
- NREL has been authorized by DOE to plan for an up to \$2.0M expansion of EAct Program
  - \$0.9M has been made available to NREL from DOE's Biomass Program for use in expanding the EAct Study
    - NREL has already received a funding letter from DOE for this amount
  - Additional \$1.1M is expected to become available shortly from DOE's Vehicle Technology Program
    - Funding letter expected in March
- NREL will sign sole source contracts with SWRI to cover expansion of the EAct Program
- Expanded fuel matrix includes 29 fuels
- 22 vehicles used in Phases 1 & 2, 19 vehicles in Phase 3
- DOE would also like to fund limited PM speciation work
- Lubrizol has committed to provide lubricant support for this program

DOE  
adding 3  
(previously 19)  
- 2 high emitters - engineered (remove catalyst)  
- 1 high mileage  
Kempal/Chet:  
just procure a high mileage  
old Tian!

## Expanded Fuel Matrix

Fuel #	T50	T90	ETOH	RVP	ARO
	°F	°F	%	psi	%
1	235	300	10	7	15
2	235	350	0	9	15
3	195	350	10	9	15
4	195	350	0	7	40
5	195	300	10	7	40
6	235	300	0	7	40
7	215	350	10	7	15
8	215	300	10	9	15
9	215	350	0	9	40
10	215	300	0	7	15
11	215	300	10	9	40
12	215	350	10	7	40
13	195	350	0	7	15
14	195	300	0	9	15
15	235	350	10	9	40
16	195	300	0	9	40
17	215	325	0	9	30
18	202	325	10	9	25
19	195	325	15	9	23
20	160	300	20	7	15
21	168	300	15	7	15
22	160	350	20	7	40
23	160	300	20	9	40
24	160	350	20	9	15
25	195	300	15	7	15
26	168	350	15	9	40
27	195	350	15	9	40
28	160	350	20	9	40
29	TBD	TBD	85	TBD	TBD

Base Program  
(1-16)

RFS 2 Subset  
(17-19)

DOE Fuels  
(20-29)

E85

*highlight  
for  
margo what  
fuel properties  
we left out*

## Timeline

Phase	# of Tests	# of Weeks	Duration	
			From	To
Fuel blending	-	22	2-Jan	31-May
Phase 1 (75°F)	135	5	1-Apr	6-May
50°F Switchover	-	2	7-May	20-May
Phase 2 (50°F)	135	7.5	21-May	11-Jul
Phase 3 (75°F)	1243	46	14-Jul	29-May-09
Reporting	-	12	1-Jun-09	31-Aug-09

No margin of safety

## Program Cost

### Base EPAAct Program (19 fuels, 19 vehicles)

Phase	# of Fuels	# of Vehicles	# of Emission Tests
1	3	19	117
2	3	19	117
3	16	19	623
857			

### Expanded EPAAct Program (29 fuels, 19 + 3 vehicles)

Phase	# of Fuels	# of Vehicles	# of Emission Tests
1	3	22	135
2	3	22	135
3	25+E85	19	982
1252			

**Ex. 4 - CBI**

Note: Calculations assume 2.05 replicates per each fuel/vehicle combination

- Both cost estimates based on SWRI proposal received on Dec. 20
- Some costs will go up, e.g. test fuel blending
- Program cost negotiations with SWRI are in progress

**Ex. 4 - CBI**

## Most Pressing Issues

- Make sure EAct Program is launched and completed on time
  - Alert SWRI management to the needs of EAct Program
    - Jeff White; Director; Light-Duty and Unregulated Emissions Section?
    - Nigel Gale; Vice President; Engine, Emissions and Vehicle Research?
  - Alert Haltermann (fuel supplier) management to the needs of EAct Program
    - Wayne Peterson, Commercial Director
    - If blending of fuels 17-19 is not accelerated in Haltermann's work schedule, Phase 1 testing will not start on April 1, 2008
    - E15 T50 issue must be resolved ASAP
  - Meet w/Wayne Peterson of Haltermann in Ann Arbor the wk of January 28 to drive home the message
  - Finalize the design of the expanded EAct Program in collaboration with NREL
- Complete cost negotiations with SWRI and approve their proposal



## Back-up Slides

## Test Program Design

- Design similar to Base EPA Act Program
  - Phase 1: RFS 2 Pilot at 75°F
    - 3 fuels (E0, E10, E15) as in base program
    - 19 vehicles as in base program + 3 high emitter/mileage vehicles
  - Phase 2: RFS 2 Pilot at 50°F
    - 3 fuels (E0, E10, E15) as in base program
    - 19 vehicles as in base program + 3 high emitter/mileage vehicles
  - Phase 3: Main Program
    - 26 fuels
      - 16 fuels as in base program + 9 additional fuels + E85
    - 19 vehicles as in base program
  - Same parameters measured as in base program
    - Exception: Limited PM speciation in Phases 1 and 2